Nonverbal communication in the real world

Alexander Wrege

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A Thesis

entitled

Nonverbal Communication in the Real World

by

Alexander Wrege

Submitted as partial fulfillment of requirements for

The Master of Arts in English with a concentration in ESL

Advisor: Dr. Douglas W. Coleman

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Graduate School

The University of Toledo

May 2004
This study examines and compares the nonverbal behavior of native speakers of English (NS) and nonnative speakers of English (NNS) and their interaction with students. Thirty subjects were studied by observing their nonverbal behavior and checking for varying degrees of frequency in use as well as for the possibility of a communicative breakdown. Several variables to classify the non-verbal behavior were designed, among them being hand-raising, frowning, head-nodding / head-shaking, directed gaze, and change in body posture.

The subjects were all teachers of English as a Second Language, some of them being teachers within the University of Toledo’s English Department, and others being instructors for the American Language Institute (ALI) on campus. All
subjects have had some teaching experience, the core of the group ranging from two to 14 years.

The choice of variables reflects the root of this study. Hard-science linguistics examines observable, real-world characteristics. It focuses on the presentation of these characteristics, rather than interpreting non-real world concepts. Therefore the variables used for this study reflect this “ability to observe”. These variables (non-verbal behavior of observed individuals) had to conform to a previously designed framework that had the purpose of limiting the interpretability of the observed behavior. In order to exclude researcher bias as much as possible, only those instances in which the non-verbal signal conformed to this framework were recorded.
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Chapter 1

Introduction

Motivation

The scientific study of language has been attempted by various researchers over the years, leading to a general use of the term “science” in the field of linguistics. This generalization causes a shift in focus from scientific methodologies (data consists of observable, real-world items) to researcher-based methodologies (data consists of researcher-created rules and items). Thus, the majority of studies of linguistics currently focus on self-created rules and tend not to conform to scientific research in hard-science fields such as geography, physics, biology, etc. (Coleman, 1999). This discrepancy ultimately causes traditional linguistic research (semantics, phonology, syntax, morphology, etc.) to yield valueless data, when looked at from a hard-science perspective.

Yngve attempts to move linguistics into the realm of hard-science research and provides researchers with a new framework to yield scientific data (Yngve, 1996). His approach to scientific research focuses on real-world observable characteristics rather than self-created examples or frameworks. A set of typical examples found in introductory linguistic textbooks focus – due to a lack of observable data – on self-created data to prove the researcher’s point; see (1) - (6) from Fromkin, et al. (2003, p. 151):
(1) Frank believes himself to be a superstar.

(2) *Frank thinks himself is a superstar.

(3) Paul believe Melissa to be his wife.

(4) Who did Paul believe to be his wife?

(5) Sam thinks that Michael is his cousin.

(6) *Who does Sam think is his cousin?

In this example, the authors present the asterisk-marked sentences as ungrammatical. This presentation of data as a fact is recurrent among traditional linguistic research. However, due to their nature (as ungrammatical), these examples have never been observed anywhere. The researchers created this set of examples to prove their point. The error of using examples (self-created) and elevating those to the status of data (which in turn is also self-created) creates a general problem in traditional linguistic research (Coleman, 1999). For studies in hard science linguistics, this type of data “collection” is not acceptable, since the very nature of data involves “complex methods of retrieving and using information from immense and varied sources of data through the use of advanced statistical tools” (Fromkin, et al., 2003, p. 579). The authors of the above mentioned examples give this as their definition of data and contradict it within the same publication.

Another issue with this presentation of structures is the fact that it does not account for other variables that occur in natural communicative tasks. These
examples can never be conclusive as the majority of the actual act of communication is left out. The researchers do not describe the situational context, personal relationship, attitudes and other real-world variables (see “Variables and Hypotheses”, below.). The creation of these examples leads into a cycle that is not easily disrupted since the primary focus seems to be on sentences, grammar, words, verbs, etc. rather than on the communicating individual.

If sentences (2) and (6) are ungrammatical, then they cannot be used to prove something is grammatical. The selection of *Frank thinks himself is a superstar is random and researcher initiated. No study has been conducted to see if this example is in fact ungrammatical. It is also implied within this example that native speakers do not use this type of structure. Depending on the communicating individual, however, this utterance might be grammatical or not. It seems inconclusive unless a study has been conducted.

*Frank thinks himself is a superstar is an arbitrary selection and could be replaced by any other utterance, rendering it ungrammatical by adding an asterisk. Therefore, the seemingly intelligent selection of *Frank thinks himself is a superstar (this fits into the set of examples provided) can be substituted with any other “example/data”, such as (2) or (8).

(7) *Frank think itself is a superstar.

(8) *Frank wanting to is a superstar.
These examples cannot prove or disprove one’s point, since no proof of an actual occurrence has been given or any research has been conducted. Hard-science linguistics discourages the usage of such ‘data’.

This study on nonverbal communication adheres to a hard-science linguistic approach, and the primary investigation as well as the execution of the thesis itself are based upon the framework outlined by Yngve (1996). The primary focus of this study shall be on non-verbal communication and the role it plays in teacher-student interaction.

Background of The Study

A recurrent complaint of students in the US-collegiate system is the unintelligibility of their foreign teachers (non-native speakers of English) (Pickering, 2001). These complaints range from “I’ve been reamed” (Tyler and Davies, 1990) to statements that international teaching assistants (ITAs) are boring and that it is difficult for students to concentrate in their classes (Hinofotis and Bailey, 1980).

Whereas Pickering approaches the problem from a phono-syntactic point of view, this study will concentrate on nonverbal cues as a contributing factor to communicative breakdown. Nonverbal communication research includes a wide variety of areas within the social and natural sciences. Its multidisciplinary nature provides the interested researcher with a multitude of relevant material, with disciplines ranging from psychology to anthropology to linguistics.

Studies in nonverbal communication in the real world conform to Yngve’s hard science linguistics framework. Nonverbal communication is observable, the
nonverbal cues being clearly visible, even having to be, in order for the linkage to be established. Also, the relevance of nonverbal communication within a communicative act is considered to be of crucial importance for successful interaction (Mehrabian, 1985; Air Force Logistics Command, 1985).

Figure 1

Figure 1.0 illustrates the distribution of attitudes and feelings through nonverbal communication. This chart indicates that the voice (intonation) transports 38% of the meaning, the “words”, 7% and the body (body language or nonverbal communication) 55% of the meaning (Air Force Logistics Command Handbook, 1985). Since this thesis is rooted in hard-science linguistics, however, we have to revise the chart accordingly.

Traditional linguists commonly refer to a language / communication as information transport from entity 1 to entity 2. This representation of the purpose
of the linkage is false, since the state that entity 1 is in cannot be fully communicated to entity 2. The assumption that communication is a “transfer of information” is flawed, since this theory depends on the idea that a representation is encoded in symbols and then decoded into a matching representation in the other communicating individual. Several variables are involved in a linkage, the sound waves, the light waves that radiate from the communicating individuals, body movements, etc. These variables cause changes in each participant of the linkage. Therefore, we have to revise the concept of communication to account for these variables.

The full circle represents a linkage, indicating the presence of some variables (body, voice, ‘words’). These variables in turn can be moved into the real world by looking at their properties. Body indicates nonverbal communication, the position of the body and general posture. These parts account for 55 percent of the linkage. Voice refers to the sound waves that radiate off of the communicating individual vocal tract to the participants eardrum. It also refers to the pitch and general volume of the voice, since these are also important devices for the participant in assessing the state of the communicating individual. Thirdly, ‘words’ cannot be termed that way in hard-science linguistics, since these are arbitrary concepts that are not observable in the real world. Now, it has to be decided if the category ‘words’ can maintain its own integrity or if it should be included within voice / sounds. Or should it be included within body? Both of these approaches have some validity. Articulations are composed of a combination
of body movements (vocal chords, tongue, jaw), which in turn cause sound waves to be emitted. For the purpose of illustrating Figure 1, I will resort to leaving the category ‘words’ as is, even though it does not agree with Yngve’s theory. It is evident, though, that nonverbal communication is an integral part of communication.

In the course of this and a previous study, the subjects have produced a variety of nonverbal behaviors, ranging from the traditional hand-raising to directed gaze as well as head-nodding and change in body posture. By observing these variables, this study hopes to further investigate the relationship between nonverbal cue and cultural background as well as nonverbal cue and communicative breakdown. It seems relevant to ask if the contribution of nonverbal communication to a linkage or communicative act is significant enough to disrupt the interaction. Or, can a successful interaction take place only after nonverbal signals have been displayed? Communication may take place in a variety of forms. Nonverbal signals are not always necessary to have successful communication (books, radio, telephone conversation). Can a lack of nonverbal signals cause a breakdown in communication? For nonnative speakers of English, telephone conversations can be extremely challenging. The inability to see the other participant can cause this breakdown.

Variables and Hypotheses

The communicative act (according to Yngve, 1996) involves several components that are generally neglected by traditional linguistic research. Human
linguistics focuses on the communicating individual itself rather than looking at structures that are not observable. The linkage, a theoretical representation of objects and events in the physical world, consists of a variety of items that are relevant for hard-science linguistics. These items play a crucial role in the scientific study of language, in particular in the study of nonverbal communication.

The following figure (Figure 2) illustrates some of these items showing, in Yngve’s framework, the relationship between real world entities and events (right) and their representations in hard-science linguistic theory (left).

<table>
<thead>
<tr>
<th>Hard Science Terminology</th>
<th>Real-World Objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating individual</td>
<td>Person</td>
</tr>
<tr>
<td>Linkage</td>
<td>Assemblage</td>
</tr>
<tr>
<td>- participant</td>
<td>- group member</td>
</tr>
<tr>
<td>- channel</td>
<td>- device</td>
</tr>
<tr>
<td>- prop</td>
<td>- objects in the physical domain</td>
</tr>
<tr>
<td>- setting</td>
<td>- surroundings</td>
</tr>
</tbody>
</table>

Figure 2

Moving this construct into a specific situation illustrates how Yngve’s framework focuses on the communicating individual.

Assume the following situation (based loosely on an example from Klein, 1985). You are present in a foreign language classroom, however, the teacher is separated from you though a cardboard wall. You can only hear her, but are unable to see her or any of her movements. She then utters: “Das ist eine Kugel”. You immediately become aware that just hearing someone say something does not
cause learning nor does it allow you even to make reasonable guesses about the utterance.

![Image](image.png)

Figure 3

Now look at a different situation. In this example (Figure 3) you can see the teacher, she looks at you, using a directed gaze, and thereby focuses your attention, she then takes an object from a box and holds it in her left hand. Next, she moves her right hand towards the objects, points the finger and says: “Das ist eine Kugel.” Now it becomes clear to you. You were able to see her nonverbal behavior as well as the object she referred to. The elements of this linkage can be identified as follows. The communicating individuals in this situation are the teacher and you. Even though they possess certain similar characteristics, they also function as participants in the linkage (communicative event, a specific state they are in). Therefore, their role of participant is more specialized. The teacher has the characteristic of being a female and you are male/female as well as student.
The light and sound waves released by the individuals are complementing the linkage and are regarded as one channel for sound and another one for lightwaves. Props play an important role in the linkage as well. The ball is the centerpiece of attention in this example, making it a prop. Other props might include pens and paper, the tables and chairs or the decoration. The setting itself, the classroom, constitutes the final part of this particular linkage.

The reason for the inclusion of you as a communicating individual in this example is the fact that you are not only a silent (or non-silent) participant but your behavior (nonverbal or verbal) opens a new linkage that in turn gives feedback to the teacher.

The relevance of nonverbal behavior (as illustrated by this example) tends to be forgotten in major linguistic research. However, if this aspect of human communication is not taken into account, a clear understanding of communication itself cannot be developed.

This study focuses on nonverbal communication in the classroom and tries to examine the relationship between certain nonverbal signals and the +English or – English status (“+” and “−” referring to native speaker or nonnative speaker of English) of the participant or communicating individual. It will investigate the different patterns of nonverbal communication used in the classroom and compare the frequency of occurrences with the communicating individual’s nativeness status.
It is hypothesized that nonverbal communication plays a crucial role in the breakdown of communication that sometimes occurs in the classroom. Several variables are observed in this study, each of them representing a certain nonverbal behavior.

**Figure 4**

The directed gaze (Figure 4) is usually used to establish a linkage, i.e. it is the device used to establish a communicative act. In nonverbal communication, this would be considered the standard initiation into a conversation. Also, the directed gaze may be accompanied by other nonverbal behaviors.

**Figure 5**
Head Nodding (Figure 5) is a clear upward and downward movement of the head. This nonverbal cue typically occurs in linkages when the participant is about to show support through verbal signals.

Figure 6
In hand raising (Figure 6), the researcher can see a change of the externally observable properties of the participant which in turn constitutes a change of the internal properties of the participant.

Figure 7
Also, with head shaking it is observable that a change in the properties of
the participant took place. The display of externally observable characteristics
again allows for an interpretation of the internal properties (i.e. a change of these).

![Image](image1.png)

**Figure 8**

Frowning (Figure 8) is characterized by a change in facial expression. The
subject might raise his/her eyebrows or wrinkle the mouth.

![Image](image2.png)

**Figure 9**

A change in body posture (Figure 9) is usually linked to other nonverbal
cues and rarely occurs on its own. Depending on the context, the subject might
change his/her position after a verbal signal or a nonverbal signal (for example a teacher approaches a student and directs her gaze at him).

It is important to note that this study does not attempt to classify nonverbal cues on the basis of the researcher’s interpretation. Since it is situated in hard-science linguistics, assumptions are not part of the equation. However, depending on the observed linkage, the researcher might be able to infer certain information from the behavior of the communicating individuals.

The usage of hand raising as a nonverbal signal still remains interpretable. Unlike the other nonverbal cues (to a more or lesser degree) hand raising seems conventionalized, a cue that is “taught” in the classroom from an early age on. It is not a response to the linkage, a reflection of changing properties, like the other signals seem to be. Depending on the point of view, however, one might argue that also cues like head-nodding and shaking as well as frowning might be conventionalized as well. These nonverbal cues do not directly resemble primary cues like directed gaze and change in body posture. Whereas the purpose for these last two seems rather obvious (directed gaze: attention; change in body posture: re-establish optimal reception of sound waves), I am unsure about the remaining four variables. According to other researchers (Darwin, 1872; Eibl-Eibesfeldt, 1975) in the field, nonverbal communication possesses the same conventionalized qualities as any other component of the linkage. Transmitting as well as receiving and feedback mechanisms evolved simultaneously (Darwin, 1872). The co-evolution of these mechanisms introduces culture-specific behavior, where communicating
individuals will favor certain nonverbal patterns. This then gradually leads to ritualized or conventionalized patterns (Eibl-Eibesfeldt, 1975) and “group members become preattuned to the pickup of these displays”.

**Directed Gaze**

Over the course of the study, it has become apparent that ‘directed gaze’ is the primary device used in nonverbal communication. Almost every action is accompanied by a directed gaze. Oftentimes a directed gaze initiates a linkage by either focusing on the participant(s) or by focusing attention to an object. This, in many cases, is a highly effective method of displaying not only awareness but also functions to reprimand.

Coupland, et al. (1991) also introduce other situational contexts (outside of the classroom) in which the directed gaze is used. They supply examples of gender differences in using the directed gaze, where the female participant uses the directed gaze far more often than the male participant in a linkage (p. 35). In a scenario like this the higher frequency of directed gazes from the female causes miscommunication with the male, who mistakes the gaze as a sign of submission. In their examples, the authors refer to this as gender miscommunication, which in hard-science linguistic terms might be referred to as a breakdown of communication.

In their publication titled “Miscommunication and Problematic Talk”, the authors also quote a study by Cook and Lalljee (1972) in which the lack of the directed gaze in certain linkages is discussed. Cook and Lalljee use a telephone
conversation as an example, where both participants have to devise a new method of turn-taking, since the directed gaze is missing as a device. The major difference between face-to-face conversations and sound-only conversations was cited as a lack of interruption in sound-only conversations.

The remaining nonverbal cues were only scarcely investigated by researchers, who generally focused on a comparison of ‘words’ and nonverbal components. One finding seemed to be unanimous among all researchers though in that they tend to see the relevance of using nonverbal communication for successful communication.

Penner (1984) gives a brief overview of nonverbal variables and relates those to success or failure in teaching. A flaw in his material, however, is the fact that most of his findings are based on observations for which he provides no research base. It remains inconclusive for the reader whether his findings are based on scientific research or his own intuition. The following represents a short summary of Penner’s claims.

Penner describes the relevance of appropriate attire and appearance in his section on bodily movement. He also includes the voice (pitch, volume) as an important component in nonverbal communication. It seems, however, that he his definitions of his variables are unclear and the ensuing overlapping variables cause confusion. Gestures of the hands, arms, and shoulders are referred to as essential for correct posture. Penner also includes facial expressions, eye contact and gestures. The students should be able to see that the professor is enthusiastic and
motivated and in order to convey that feeling, the professor should maintain good
eye contact.

Gestures should be motivated, meaningful, natural, and spontaneous as well as not
calling attention to themselves.

Penner’s unclear variables are a reflection of a lack of consistency among
his definitions of the variables. He is unable to differentiate between the several
important components of a linkage and also does not divide nonverbal
communication in comprehensible parts. This lack of division, combined with
overlapping categories, renders this source not useful for research in hard-science
linguistics. However, since this was a recurrent problem (lack of clear-cut
definitions, use of appropriate terminology) in the majority of the publications on
nonverbal communication, I chose to include in this study to illustrate typical
limitations within the my preliminary research stages.
Chapter 2

Methodology

This section of the paper will deal with the technical aspects of the thesis, focusing in part on the hypotheses, the research design, the subjects, and the data analysis.

Traditional linguists commonly refer to a language / communication as information transport from entity 1 to entity 2. This representation of the linkage is false, since the state that entity 1 is in cannot be fully transferred into entity 2. Several variables are involved in a linkage, the sound waves, the light waves that radiate from the communicating individuals, body movements, etc. These variables cause a change in each participant of the linkage. Therefore, we can conclude only that both individuals are in a state of flux.

In the course of this and a previous unpublished study, the subjects have produced a variety of nonverbal behaviors, ranging from the traditional hand-raising to directed gaze as well as head-nodding and change in body posture. By observing these variables, this study hopes to further investigate the relationship between nonverbal cue and cultural background as well as nonverbal cue and communicative breakdown. It seems relevant to ask if nonverbal communication’s contribution to a linkage or communicative act is significant enough to disrupt the interaction. Or, can a successful interaction only take place after nonverbal signals
have been displayed? Can a lack of nonverbal signals cause a breakdown in communication?

The communicative act (according to Yngve, 1996) involves several components that are generally neglected by traditional linguistic research. Human linguistics focuses on the communicating individual itself rather than looking at structures that are not observable. The linkage, a theoretical representation of an assemblage, consists of a variety of items that are relevant for hard-science linguistics. These items play a crucial role in the scientific study of people communicating, in particular in the study of nonverbal communication.

This study focuses on nonverbal communication in the classroom and examines the proposed relationship between certain nonverbal signals and the +English or – English status (+ and – referring to native speaker or nonnative speaker of English) of the participant or communicating individual. It will investigate the different patterns of nonverbal communication used in the classroom and compare the frequency of occurrences with the communicating individual’s nativeness status.

It is hypothesized that nonverbal communication plays a crucial role in the breakdown of communication that sometimes occurs in the classroom. Several variables are observed in this study, each of them representing a certain nonverbal behavior.
Participants

The thirty subjects in this study consist of mixture of sections of freshman composition classes and freshman international student preparation classes, from five intact groups, and TAs (teaching assistants). The student group is composed of students from a variety of countries, some being native speakers of English, some being non-native speakers.

Some of the TAs are native speakers of “North-American Standard English”, all of them having never lived abroad for a substantial period of time and, though possibly being from a multiethnic/multicultural background, have been residents of the US for several generations, thereby having adapted to patterns found among the cultural group present here in the United States.

The other TAs (henceforth ITAs- “international teaching assistants”) are from varying cultural backgrounds, all of the subjects were nonnative speakers of English. The ITAs observed for this study had just recently (< two years) come to the US, some of them having been here for only a few months.

Eibl-Eibesfeld (1975) propose that true conventionalization of nonverbal signals can only take place if the communicating individuals have been present in the respective cultural group, which in turn had to have a consistent isolation for several generations. With that in mind, ITAs qualify for this study even if they have been present in the United States for several years (assuming they came here after having finished a baccalaureate / and lived in their root culture). The argument of fast adaptation to cultural norms (such as nonverbal communication)
is not valid here, due to the reasons outlined above. Though ‘new’ nonverbal signals may be incorporated into the inventory relatively quickly, displaying those in a linkage takes several years of exposure to the target culture.

**Data Collection Instrument**

Data collection was based on several observable characteristics. This is one of the primary rules for hard-science linguistics. The instrument was composed of several variables (hand-raising, frowning, change in body posture, head-nodding, head-shaking, and directed gaze). These categories were complemented by the category “speaker”, in which the researcher took note of the nativeness-status of the communicating individual.

The data was collected “by instance”, meaning that every time the teacher or student attempted a linkage by means of a nonverbal communicative cue, this was recorded. The data collection instrument (Figure 10) shows the reciprocity of a) teacher initiated, student displays nonverbal signal, b) student initiated – teacher displays nonverbal signal c) teacher initiated – ø response or d) student initiated - ø response.

A situation might look like this: The teacher stands in front of the classroom. Some of his students are looking at him, others are unpacking their bookbag, talking to each other or focusing on their notes. The teacher then proceeds with the instruction, holds up his book, gazes at his students directly (a pan over the classroom) asking his students: “Please open your book to page 58.” Only by
using all channels (sound waves, light waves) is the teacher in this particular situation able to focus the attention of his students. The nonverbal signal alone would not be sufficient enough since some of the students are not even looking at him. The students then proceed on to opening their books. The linkage is still going on. Several students start to display nonverbal signals. Some raise their hand, some frown. Others are already busy reading page 58. The teacher then asks one of those students that raised their hands: “Student XX, do you have a question?” “What page?” “Page 58.” This causes several other students to stop “hand-raising” and proceed to open page 58. However, one student is still frowning. The teacher says, “Is there a problem?” The student replies, “I don’t have a book.” Other students shuffle their table/chair combination towards the student without the book, raise their book and point it towards that student, indicating their willingness to share their copy.

Additionally, the teacher only has limited power to initiate the linkage. The usage of nonverbal signals is only permissible when the teacher is familiar with the names of his students. Then he can alert them verbally and demand a response. However, in some of the classes observed, the teacher was not able to initiate a linkage because the students were not looking at him when he sent out the panning directed gaze. If the teacher did not know that specific student’s name, the teacher had to resort to walking up to the student and the change of body posture / proximity was enough to alert the student without using sound waves.
In most cases the teacher was the initiating participant in the linkage, the students were more passive as participants. In some of the observed classes, the teacher used certain props (blackboard, PowerPoint presentation, and other items) in the linkage. These props play a specific role in nonverbal communication because the majority of directed gaze were related to a prop within the linkage. As outlined in the “Das ist eine Kugel” example, a directed gaze at a prop by the teacher typically caused an observable response from the students – a reciprocated directed gaze at either the prop or the teacher.

The setting of each of these observations was always the classroom. Some of the classes were foreign language classes (English, College Composition for Nonnative Speakers), others were presentation-based classes, where the teacher presented a topic on a variety of fields. These topics mostly revolved around traditional linguistics and the teacher focused on “grammar and vocabulary building”. Other topics included culture classes, where the teachers presented their target audience with relevant material related to cultural specifics in their field.

<table>
<thead>
<tr>
<th>NS / NNS</th>
<th>dir.gaze</th>
<th>frown</th>
<th>body post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 10

Figure 10 displays the first of two data collection instruments. This data collection instrument looks for the difference in the occurrence of nonverbal signals among
native speakers of English and nonnative speakers of English. It can also
determine, which nonverbal signal was used most frequently, and which nonverbal
signals usually go together.

<table>
<thead>
<tr>
<th>NS / NNS</th>
<th>V/NV</th>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 11 displays the success rate of nonverbal and verbal linkage attempts. It is
able to display if the nonnative speaker or native speaker had a higher success rate
with either nonverbal or verbal communication.
Chapter III

Results

The first data collection instrument had the purpose of finding a relationship between nativeness and usage of certain nonverbal cues. It is designed to support the $H_0$ that nonnative speakers use different or inappropriate nonverbal signals to convey their message. The $H_A$ states that there is no significant relationship between nativeness and usage of nonverbal cues.

Figure 12 displays the predicted classification of group membership (native vs. nonnative) based on the nonverbal behavior of all types combined using a discriminative analysis.

<table>
<thead>
<tr>
<th>SPEAK</th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Original Count</td>
<td>73</td>
<td>54</td>
</tr>
<tr>
<td>1</td>
<td>29</td>
<td>94</td>
</tr>
<tr>
<td>%</td>
<td>57.5</td>
<td>42.5</td>
</tr>
<tr>
<td>1</td>
<td>23.6</td>
<td>76.4</td>
</tr>
</tbody>
</table>

a. 66.8% of original grouped cases correctly classified.

Figure 12 – Classification by group

Since we only have 66.8 % of all cases correctly classified, this is not a significant finding. However, when looking at the relative probability of native speakers being correctly classified, this goes up to 76.4 %, giving us a clear idea
that the classification of native speakers was closer to the optimum than for nonnative speakers where only 57.5% were correctly classified.

### SPEAK * DIRGAZ Crosstabulation

<table>
<thead>
<tr>
<th></th>
<th>DIRGAZ</th>
<th></th>
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**Figure 13 Speak & Dirgaz**

The Chi-square for the data in Figure 13 displays a nonsignificant result (p=.103) which indicates that directed gaze is not a variable that helps us to determine a difference in nonverbal behavior between native and nonnative speakers.
**Figure 14 Speak & Frown**

For the chi-square testing a relationship between nativeness and frowning, we were able to find a significant result \((p = .000)\) which allows us to accept the \(H_0\) that nonnative speakers use different or inappropriate nonverbal signals to convey their message. Whereas native speakers had no occurrence of frowning in the data, nonnative speakers showed an occurrence of 17.3 \(\%\).
**SPEAK * BODYPOST Crosstabulation**

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</table>

**Figure 15 Speak & Body posture**

In Figure 15 we again find a significance value of $p = .000$, allowing us to reject the null hypothesis. Nonnative speakers had 46.5% occurrences of a change in body posture, whereas the native speakers only had 23.6%.

**Second Data Collection Instrument**

This instrument had the purpose of determining the relationship between success of verbal or nonverbal signals for either native speakers (Figure 16) or nonnative speakers (Figure 17). It was also used to determine the overall success rate for native and nonnative speakers (Figure 18). Finally the relationship between nativeness and usage of verbal and nonverbal cues was investigated (Figure 19).
Figure 16 shows the relationship of success and verbal / nonverbal cues for native speakers. It indicates that all occurrences of nonverbal communication were successful (100%) and 84.6 % of verbal communication was successful. However, the expected cell count was too low, and therefore this result is not valid.
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</table>

Figure 17

Figure 17 displays the same test for nonnative speakers. 68.4% of the occurrences of nonverbal communication were successful, 65.8% of the verbal communication was successful. In this example, the significance was too low again (p = .821).
**Figure 18**

Figure 18 yielded a high significance (p = .003) which is complemented by an overall success rate for native speakers of 85.9% and for non-native speakers of 66.2%.
Figure 19 illustrates that native speakers use verbal communication (91.5%) more often than nonverbal communication (8.5%). It also shows that nonnative speakers have only 85.4% occurrences of verbal communication, versus 14.6% nonverbal. The significance was again too low for the result to be meaningful, however.
Chapter 4

Summary of Findings

The statistical tests performed in Chapter 3 allow us to draw the following conclusions. Native speakers have a higher overall success rate in communication (85.9%). Nonnative speakers have an overall lower success rate in communication (66.2%). Among the nonverbal cues, nonnative speakers used frowning and change in body posture. Native speakers had no occurrence of frowning and only a 23.6% occurrence of change in body posture versus the 46.5% for nonnative speakers.

Implications

The relevance of nonverbal communication in the linkage is highly significant. This study shows a significant difference in nonverbal behavior for native speakers and nonnative speakers. It also shows the overall lower success rate for nonnative speakers and their tendency to use nonverbal cues differently from native speakers. However, certain variables could not be observed since they were not within the realm of hard-science linguistics, or at least not testable at this point.
References


